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on the Non-Proliferation of Nuclear Weapons

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ACTIVITIES OF THE INTERNATIONAL ATOMIC ENERGY AGENCY DURING THE PERIOD 1985–89 RELEVANT TO ARTICLE III OF THE TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

(Prepared by the Secretariat of the IAEA
for the Fourth Review Conference of the Parties to the NPT)

Activities of the IAEA during the period 1985-89
relevant to Article III of the NPT

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ARTICLE III OF THE NPT

"1. Each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this Article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this Article shall be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.

2. Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.

3. The safeguards required by this Article shall be implemented in a manner designed to comply with Article IV of this Treaty, and to avoid hampering the economic or technological development of the Parties or international co-operation in the field of peaceful nuclear activities, including the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes in accordance with the provisions of this Article and the principle of safeguarding set forth in the Preamble of the Treaty.

4. Non-nuclear-weapon States Party to the Treaty shall conclude agreements with the International Atomic Energy Agency to meet the requirements of this Article either individually or together with other States in accordance with the Statute of the International Atomic Energy Agency. Negotiation of such agreements shall commence within 180 days from the original entry into force of this Treaty. For States depositing their instruments of ratification or accession after the 180-day period, negotiation of such agreements shall commence not later than the date of such deposit. Such agreements shall enter into force not later than eighteen months after the date of initiation of negotiations."

FINAL DECLARATION OF THE THIRD REVIEW CONFERENCE OF THE PARTIES TO THE TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS (NPT/CONF.III/64/I)

Review of the Operation of the Treaty and Recommendations

Article III and preambular paragraphs 4 and 5

1. The Conference affirms its determination to strengthen further the barriers against the proliferation of nuclear weapons and other nuclear explosive devices to additional States. The spread of nuclear explosive capabilities would add immeasurably to regional and international tensions and suspicions. It would increase the risk of nuclear war and lessen the security of all States. The Parties remain convinced that universal adherence to the Non-Proliferation Treaty is the best way to strengthen the barriers against proliferation and they urge all States not party to the Treaty to accede to it. The Treaty and the regime of non-proliferation it supports play a central role in promoting regional and international peace and security, inter alia, by helping to prevent the spread of nuclear explosives. The non-proliferation and safeguards commitments in the Treaty are essential also for peaceful nuclear commerce and co-operation.

2. The Conference expresses the conviction that IAEA safeguards provide assurance that States are complying with their undertakings and assist States in demonstrating this compliance. They thereby promote further confidence among States and, being a fundamental element of the Treaty, help to strengthen their collective security. IAEA safeguards play a key role in preventing the proliferation of nuclear weapons and other nuclear explosive devices. Unsafeguarded nuclear activities in non-nuclear-weapon States pose serious proliferation dangers.

3. The Conference declares that the commitment to non-proliferation by nuclear-weapon States Party to the Treaty pursuant to Article I, by non-nuclear-weapon States Party to the Treaty pursuant to Article II, and by the acceptance of IAEA safeguards on all peaceful nuclear activities within non-nuclear-weapon States Party to the Treaty pursuant to Article III is a major contribution by those States to regional and international security. The Conference notes with satisfaction that the commitments in Articles I - III have been met and have greatly helped prevent the spread of nuclear explosives.

4. The Conference therefore specifically urges all non-nuclear-weapon States not party to the Treaty to make an international legally-binding commitment not to acquire nuclear weapons or other nuclear explosive devices and to accept IAEA safeguards on all their peaceful nuclear activities, both current and future, to verify that commitment. The Conference further urges all States in their international nuclear co-operation and in their nuclear export policies and, specifically as a necessary basis for the transfer of relevant nuclear supplies to non-nuclear-weapon States, to take effective steps towards achieving such a commitment to non-proliferation and acceptance of such safeguards by those States. The Conference expresses its view that accession to the Non-Proliferation Treaty is the best way to achieve that objective.

5. The Conference expresses its satisfaction that four of the five nuclear-weapon States have voluntarily concluded safeguards agreements with the IAEA, covering all or part of their peaceful nuclear activities. The Conference regards those agreements as further strengthening the non-proliferation regime and increasing the authority of IAEA and the effectiveness of its safeguards system. The Conference calls on the nuclear-weapon States to continue to co-operate fully with the IAEA in the implementation of these agreements and calls on IAEA to take full advantage of this co-operation. The Conference urges the People's Republic of China similarly to conclude a safeguards agreement with IAEA. The Conference recommends the continued pursuit of the principle of universal application of IAEA safeguards to all peaceful nuclear activities in all States. To this end, the Conference recognizes the value of voluntary offers and recommends further evaluation of the economic and practical possibility of extending application of safeguards to additional civil facilities in the nuclear-weapon States as and when IAEA resources permit and consideration of separation of the civil and military facilities in the nuclear-weapon States. Such an extending of safeguards will enable the further development and application of an effective regime in both nuclear-weapon States and non-nuclear-weapon States.

6. The Conference also affirms the great value to the non-proliferation regime of commitments by the nuclear-weapon States that nuclear supplies provided for peaceful use will not be used for nuclear weapons or other nuclear explosive purposes. Safeguards in nuclear-weapon States pursuant to their safeguards agreements with IAEA can verify observance of those commitments.

7. The Conference notes with satisfaction the adherence of further Parties to the Treaty and the conclusion of further safeguards agreements in compliance with the undertaking of the Treaty and recommends that:

(a) The non-nuclear-weapon States Party to the Treaty that have not concluded the agreements required under Article III (4) conclude such agreements with IAEA as soon as possible;

(b) The Director General of IAEA intensify his initiative of submitting to States concerned draft agreements to facilitate the conclusion of corresponding safeguards agreements, and that Parties to the Treaty, in particular Depositary Parties, should actively support these initiatives;

(c) All States Party to the Treaty make strenuous individual and collective efforts to make the Treaty truly universal.

8. The Conference notes with satisfaction that IAEA, in carrying out its safeguards activities, has not detected any diversion of a significant amount of safeguarded material to the production of nuclear weapons, other nuclear explosive devices or to purposes unknown.

9. The Conference notes that IAEA safeguards activities have not hampered the economic, scientific or technological development of the Parties to the Treaty, or international co-operation in peaceful nuclear activities and it urges that this situation be maintained.

10. The Conference commends IAEA on its implementation of safeguards pursuant to this Treaty and urges it to continue to ensure the maximum technical and cost effectiveness and efficiency of its operations, while maintaining consistency with the economic and safe conduct of nuclear activities.

11. The Conference notes with satisfaction the improvement of IAEA safeguards which has enabled it to continue to apply safeguards effectively during a period of rapid growth in the number of safeguarded facilities. It also notes that IAEA safeguards approaches are capable of adequately dealing with facilities under safeguards. In this regard, the recent conclusion of the project to design a safeguards regime for centrifuge enrichment plants and its implementation is welcomed. This project allows the application of an effective regime to all plants of this type in the territories both of nuclear-weapon States and non-nuclear-weapon States Parties to the Treaty.

12. The Conference emphasizes the importance of continued improvements in the effectiveness and efficiency of IAEA safeguards, for example, but not limited to:

(a) Uniform and non-discriminatory implementation of safeguards;

(b) The expeditious implementation of new instruments and techniques;

(c) The further development of methods for evaluation of safeguards effectiveness in combination with safeguards information;

(d) Continued increases in the efficiency of the use of human and financial resources and of equipment.

13. The Conference believes that further improvement of the list of materials and equipment which, in accordance with Article III (2) of the Treaty, calls for the application of IAEA safeguards should take account of advances in technology.

14. The Conference recommends that IAEA establish an internationally agreed effective system of international plutonium storage in accordance with Article XII(A)5 of its Statute.

15. The Conference welcomes the significant contributions made by States Parties in facilitating the application of IAEA safeguards and in supporting research, development and other supports to further the application of effective and efficient safeguards. The Conference urges that such co-operation and support be continued and that other States Parties provide similar support.

16. The Conference calls upon all States to take IAEA safeguards requirements fully into account while planning, designing and constructing new nuclear fuel cycle facilities and while modifying existing nuclear fuel cycle facilities.

17. The Conference also calls on States Parties to the Treaty to assist IAEA in applying its safeguards, inter alia, through the efficient operation of State systems of accounting for and control of nuclear material, and including compliance with all notification requirements in accordance with safeguards agreements.

18. The Conference welcomes the Agency's endeavours to recruit and train staff of the highest professional standards for safeguards implementation with due regard to the widest possible geographical distribution, in accordance with Article VII D of the IAEA Statute. It calls upon States to exercise their right regarding proposals of designation of IAEA inspectors in such a way as to facilitate the most effective use of safeguards manpower.

19. The Conference also commends to all States Parties the merits of establishment of international fuel cycle facilities, including multination participation, as a positive contribution to reassurance of the peaceful use and non-diversion of nuclear materials. While primarily a national responsibility, the Conference sees advantages in international co-operation concerning spent fuel storage and nuclear waste storage.

20. The Conference calls upon States Parties to continue their political, technical and financial support of the IAEA safeguards system.

21. The Conference underlines the need for IAEA to be provided with the necessary financial and human resources to ensure that the Agency is able to continue to meet effectively its safeguards responsibilities.

22. The Conference urges all States that have not done so to adhere to the Convention on the Physical Protection of Nuclear Material at the earliest possible date.

IAEA
ACTIVITIES UNDER ARTICLE III OF NPT

I. INTRODUCTION

1. IAEA safeguards are based upon the Agency's Statute and upon individual safeguards agreements. These agreements were, for many years, based on document INFCIRC/66/Rev.2, which is still the basis for agreements with States not parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). For those States which are parties to the Treaty, document INFCIRC/153 is the model for safeguards agreements. A further document has been designed to accommodate those States not parties to NPT who would wish to accept full-scope safeguards[1], and modified safeguards agreements have been developed to respond to the voluntary offers made by the nuclear-weapon States[2], the provisions of regional treaties [3] and the particular circumstances which pertain in a group of States and in another State [4].

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[1] INFCIRC/359 (Albania).

[2] INFCIRC/263, INFCIRC/288, INFCIRC/290, INFCIRC/327 and INFCIRC/369 for UK, USA, France, USSR, and China, respectively.

[3] INFCIRC/306 (Colombia) and INFCIRC/316 (Panama). These agreements are based on the Treaty of Tlatelolco. A number of other agreements have been concluded with States pursuant to both the Treaty of Tlatelolco and the NPT. The Agency has used document INFCIRC/153, with certain adaptations, for concluding safeguards agreements with some States party to the Treaty of Tlatelolco.

[4] INFCIRC/193 (EURATOM), INFCIRC/255 (Japan).

2. All Agency safeguards agreements, whether formulated on the basis of INFCIRC/66/Rev.2 or INFCIRC/153, are similar in the sense that implementation of the agreements is designed to provide convincing evidence, as a confidence-building measure, that the country which has voluntarily "invited" the application of these safeguards is abiding by its obligations. Other similar or common features are that all Agency safeguards agreements contain undertakings by the Agency to:

(1) avoid hampering a State's economic and technological developments;

(2) avoid undue interference in a State's peaceful nuclear activities;

(3) carry out its function in a manner consistent with prudent management practices; and

(4) protect commercial and industrial secrets and other confidential information by restricting its dissemination, according to practices agreed upon by both the State and the Agency.

Purpose of safeguards

3. The general purpose of safeguards is to enable States to demonstrate to the world community that they are abiding by the obligations they have accepted in international treaties and safeguards agreements.

4. The NPT defines the purpose of safeguards. Each non-nuclear-weapon State party to the Treaty undertakes to accept safeguards for the exclusive purpose of verifying the fulfilment of its obligations assumed under the NPT not to divert nuclear material from peaceful uses to nuclear weapons or other nuclear explosive devices. The objectives of safeguards are stated in INFCIRC/153 as being the "timely detection of diversion of significant quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or other nuclear explosive devices or for purposes unknown ..."

5. In order to meet these objectives, the Agency's safeguards system uses the following basic concepts to verify information supplied by a State:

(a) Audit of records and comparison of the State's reports to the Agency with the records kept by the State;

(b) Verification of the inventory and flow of source and special fissionable material by the use of instruments and other techniques at certain strategic points;

(c) The periodic closing of material balances by the taking of physical inventories and their verification;

(d) The use of containment and surveillance as important complementary measures to materials accounting.

II. PRESENT STATUS

The statement of conclusions from 1985 to 1989

6. The IAEA's verification activities are reported to the IAEA Board of Governors in the annual Safeguards Implementation Report (SIR). For the years 1985 to 1989, the period following the Third NPT Review Conference, the SIR has stated that, during the preceding year, the Secretariat in applying safeguards "did not detect any anomaly which would indicate the diversion of a significant amount of safeguarded nuclear material or the misuse of facilities or equipment ... for the manufacture of any nuclear weapon, or to further any other military purpose, or for the manufacture of any other nuclear explosive device". Each year the IAEA Board of Governors has taken note of this assessment.

7. The annual statement of conclusions is also reflected in the Annual Report of the IAEA which is submitted by the Board of Governors to the Agency's General Conference and subsequently transmitted to the United Nations General Assembly. The Annual Reports since 1985 have contained the conclusion, taken from the SIR, that during the preceding year "nuclear material under Agency safeguards remained in peaceful nuclear activity or was otherwise adequately accounted for".

8. There have been a number of mostly minor discrepancies and anomalies which were explained upon subsequent investigation. These included cases in which Agency equipment failed to produce conclusive results and the inventories of nuclear material had to be reverified.

NPT safeguards agreements

9. At the end of June 1990 the IAEA Secretariat knew of 139 States which were parties to the NPT, including three nuclear-weapon States. Twenty-three of these States were also parties to the Tlatelolco Treaty and eight to the Rarotonga Treaty. Between 1 January 1985 and 30 June 1990, the following 16 non-nuclear-weapon States ratified or acceded to the NPT:

Seychelles	12 March 1985
Brunei Darussalam	26 March 1985
Kiribati	18 April 1985
Guinea	29 April 1985
Bhutan	23 May 1985
Belize	9 August 1985
Democratic People's Republic of Korea	12 December 1985
Malawi	18 February 1986
Colombia	8 April 1986
Yemen Arab Republic 5/	14 May 1986
Trinidad and Tobago	30 October 1986
Spain	5 November 1987
Saudi Arabia	3 October 1988
Bahrain	3 November 1988
Qatar	3 April 1989
Kuwait	17 November 1989

10. In accordance with Article III.4 of the NPT, States parties to the Treaty must conclude a safeguards agreement with the Agency. On 30 June 1990, safeguards agreements were in force for 85 of the 136 non-nuclear-weapon States party to the NPT. Of these, 42 States have no nuclear activity and no nuclear material or facility in operation. The list of 51 non-nuclear-weapon States which have not as yet concluded the required safeguards agreement pursuant to Article III.4 of the NPT is presented in Annex 1. At the end of June 1990, the Agency applied safeguards in 42 non-nuclear-weapon States parties to the NPT and in one State pursuant to the Tlatelolco Treaty.

5/ Democratic Yemen became a Party to the NPT on 1 June 1979. The Yemen Arab Republic acceded to the NPT on 14 May 1986. On 22 May 1990 the two States united to form the Republic of Yemen.

11. The Director General submits to new parties to the NPT a draft of the required safeguards agreement, and regularly reminds those States which have not yet concluded the agreement of their obligation to do so (see NPT III Final Declaration para. 7(b)). Twelve of the 43 States, that have concluded safeguards agreements with the Agency, have not concluded all the relevant facility attachments. Annex 2 provides a chart showing the number of non-nuclear-weapon States where the Agency applies safeguards pursuant to agreements based on INFCIRC/153, and related statistical data for the years 1980, 1985, 1986, 1987, 1988 and 1989.

12. Document INFCIRC/153 was specifically developed to meet the requirements of the NPT. Each non-nuclear-weapon State party to the Treaty has undertaken to accept safeguards on all its peaceful nuclear activities for the exclusive purpose of verifying that no source or fissionable material is diverted to nuclear weapons or other nuclear explosive devices.

However, if the State decides to use safeguarded nuclear material for non-proscribed military purposes in a nuclear activity, an arrangement can be made so that safeguards will not apply during the period of agreed military use. No such arrangements have yet been required.

13. The ten non-nuclear-weapon State members of the European Atomic Energy Community and signatories of the NPT exercised the option provided by Article III.4 of the NPT to conclude with the Agency an agreement "together with other States". The resulting agreement (INFCIRC/193) follows the provisions of INFCIRC/153 in all its aspects but there are some variations from INFCIRC/153, mainly to take into account EURATOM's safeguards system and to define the respective responsibilities of the Community and its Member States.[6]

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[6] Similar provisions are included in the agreement with Japan (INFCIRC/255).

Safeguards agreements other than those in connection with the NPT

14. At the end of June 1990, safeguards were applied in 11 States pursuant to agreements concluded on the basis of document INFCIRC/66/Rev.2 (the Agency also applies safeguards to nuclear installations in Taiwan, China). In five of these States not all the relevant facility attachments had been concluded. Annex 3 contains a chart showing the number of countries where the Agency applies safeguards pursuant to agreements concluded on the basis of document INFCIRC/66/Rev.2, together with related statistical information for the years 1980, 1985, 1986, 1987, 1988 and 1989. During the period under review one safeguards agreement concerning the supply of a nuclear power station by a State party to the NPT entered into force [7]

15. Voluntary offer agreements have entered into force with the five nuclear-weapon States (the UK on 14 August 1978, the USA on 9 December 1980, France on 12 September 1981, the Soviet Union on 10 June 1985 and China on 18 September 1989) (see NPT III Final Declaration para. 5). Three of these States are party to the NPT but their safeguards agreements do not follow the pattern of those concluded under Article III.4 of the NPT. The offers made by the nuclear-weapon States are limited in scope and are subject to the exclusions of nuclear activities specifically for national security purposes. They permit nuclear material to be withdrawn from safeguards for military use (although some nuclear material in NWS carries suppliers' peaceful use obligations). They also provide for the possibility of withdrawal of facilities or of material from facilities on the list of facilities eligible for Agency safeguards.

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[7] Agreement with India in connection with the supply of a nuclear power station from the USSR (INFCIRC/360).

16. The Treaty of Tlatelolco (art.13) provides that the Parties shall negotiate multilateral or bilateral agreements with the IAEA for the application of its safeguards to its nuclear activities. No specific document has been developed for the application of safeguards to States party to the Treaty of Tlatelolco. The Agency has used document INFCIRC/153, with certain adaptations, for concluding safeguards agreements with States party to the Treaty of Tlatelolco. Three States not parties to the Treaty of Tlatelolco have also undertaken to apply the status of denuclearization to the territories within the zone of application of the Treaty for which, de jure or de facto, they are internationally responsible (Additional Protocol I of the Treaty of Tlatelolco). Two of these States have concluded appropriate safeguards agreements with the Agency and the agreement with the third State is at present under negotiation. The Treaty of Rarotonga (Articles 4 and 8 and Annex 2) foresees that the Agency might be requested to perform safeguards functions. The parties to the Treaty agreed that the safeguards agreement to be concluded with the Agency should be equivalent in scope and effort to an NPT safeguards agreement based on document INFCIRC/153. Existing nuclear activities in the countries of the region party to the Treaty are, in fact, already covered by safeguards agreements concluded pursuant to NPT.

17. At its meetings on 24 and 25 February 1976, the Secretariat was requested by the Board of Governors (resolution GOV/DEC/88 (XIX) to draft a model safeguards agreement for the use of States not party to the NPT wishing to conclude an agreement with the Agency for the application of safeguards to all their peaceful nuclear activities. One State has concluded such an agreement, Albania. When this agreement was approved by the Board of Governors in June 1986 some members of the Board noted that they did not regard it as a model or precedent. The basic undertaking of this agreement is that no nuclear material or facility will be used for the manufacture of any nuclear weapon or to further any military purpose or for the manufacture of any other nuclear explosive device. There is no provision for the withdrawal of safeguarded material for use in non-proscribed military activities.

III. MATTERS AFFECTING AGENCY SAFEGUARDS

18. In order to achieve the maximum technical and cost effectiveness and efficiency, and in the light of suggestions made by the Third NPT Review Conference in 1985, the Agency has examined, during the period covered by the this report, the following topics:

(a) Safeguards implementation in a uniform and non-discriminatory manner

At the end of June 1990, the Agency applied safeguards in 57 States (and in Taiwan, China) under various safeguards agreements concluded between these States and the Agency, as prescribed in the agreements concerned. The specific standardized safeguards procedures are described in the subsidiary arrangements/facility attachments. The Agency has also developed standard inspection practices on the basis of experience, so that safeguards can be implemented in a technically consistent manner.

(b) Introduction of new instruments and techniques

The Agency continues its work on development and improvement of new safeguards approaches for:

- Facilities where optical surveillance alone provides inconclusive results;

- Facilities where the approaches currently being used do not provide for the full attainment of the inspection goals;

- Other types of facilities, such as fast breeder reactors (FBRs), highly automated fuel fabrication facilities where in-process sample taking is not possible, and difficult to access long-term spent fuel storage facilities;

- Nuclear material in waste and spent fuel for which final disposal is envisaged, and for LWRs with MOX fuel assemblies which can be dismantled for operational reasons.

(c) Development of methods for the evaluation of safeguards effectiveness

(i) In the period 1985–89, 11508 inspection reports and 12364 statements and letters of conclusions were reviewed. The average time between an inspection and the dispatch of the prescribed statement or letter to the inspected State was substantially decreased during the period under review.

(ii) Quality assurance activities included an independent programme for testing the sensitivity of the verification of safeguards seals after return to Headquarters.

(iii) The ability to estimate the quality of safeguards measurements continues to improve. Historical data on a large number of material balance areas – strata – measurement type combinations provide the information necessary to define the quality of the measurement systems used in material balance evaluations. These data come partly from destructive analyses done by the Safeguards Analytical Laboratory, the Network Laboratories and by operators. Data files and analysis algorithms that will support the definition of non-destructive analysis data quality in a similar fashion are under development.

(iv) As a result of the efforts made in the period 1985–89, the activities in the area of safeguards effectiveness evaluation continued to increase both in scope and depth. Systematic, computer-aided evaluation procedures have been developed and used to evaluate the safeguards effectiveness data resulting from the totality of information gained by the Agency through its inspection and nuclear materials accounting activities.

(d) Application of safeguards approach designed for centrifuge enrichment plants

The only type of isotope enrichment facility under safeguards is of the gas centrifuge type. No gaseous diffusion type enrichment plant has been placed under safeguards. The laser enrichment technique has not reached the industrial level as yet and there is no information on how quickly the Agency may need a safeguards approach for this type of plant.

The Hexapartite study[8] on gas centrifuge enrichment plants, undertaken by Australia, the Federal Republic of Germany, Japan, the Netherlands, the United Kingdom, the United States of America, EURATOM and the Agency to develop a safeguards approach for these plants was successfully concluded in 1983. Facility attachments have been concluded and inspections are performed at plants in the United Kingdom, the Federal Republic of Germany, Japan and the Netherlands. The USA offered a plant for inspection. Inspections were conducted at this plant until the USA decided to discontinue its operation.

The safeguards approach developed for those plants provides for a limited number of unannounced inspections within the sensitive cascade areas to enable the Agency to confirm that no modification of the cascade equipment has been made and to identify modifications of the plant layouts.

(e) The study of a safeguards approach for large-scale reprocessing plants

Over the years efforts have continued to improve safeguards for reprocessing plants to strengthen the Agency's capabilities at existing plants and to prepare for the application of safeguards at modern, currently planned large-scale reprocessing plants.

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[8] "Inspection activities associated with limited frequency unannounced access model applied to gas centrifuge type enrichment plants", 4 February 1983.

The Agency is participating in LASCAR (Large-Scale Reprocessing Plant Safeguards), a forum for the exchange of information on the development of safeguards for large-scale commercial reprocessing plants expected to begin operation by the year 2000. The governments of France, the Federal Republic of Germany, Japan, the United Kingdom and the United States of America and the European Community participate in this forum.

(f) Safeguards resources

Current budgetary limitations do not permit the Secretariat to pursue the broad development of safeguards techniques and safeguards equipment. However, as a result of the safeguards support programmes established by certain Member States and EURATOM, a comprehensive effort has been made since 1976 to improve the Agency's technical capabilities. Details of budgetary appropriations and of extrabudgetary resources for the period 1985-1989 are given at Annex 4.

Formal safeguards support programmes exist with Australia, Belgium, Canada, Finland, France, the Federal Republic of Germany, the German Democratic Republic, Italy, Japan, Sweden, the Soviet Union, the United Kingdom, the United States and EURATOM.

Other Member States (notably Argentina, Austria, Bulgaria, Czechoslovakia, Hungary, the Netherlands, Switzerland and Yugoslavia) continue to contribute through research and development agreements, contracts and test programmes.

(g) Increased efficiency in the use of resources and equipment

The Agency is continuing to develop and refine safeguards approaches and instruments, to exercise increasingly effective quality control, to provide more introductory and specialized training for its inspectors, to standardize reporting and other safeguards procedures at particular types of plants and to use available resources efficiently and effectively both in terms of manpower and costs.

The principal personnel objective is to develop a motivated and efficient inspectorate effectively organized for its tasks. Inspectors are recruited on the basis of specified qualifications and a training programme is conducted for junior professionals from developing countries to enhance their opportunities for recruitment as safeguards inspectors.

Comprehensive inspection training exercises are conducted in various Member States for newly recruited inspectors. Advanced and refresher courses, as well as individual training in the NDA and C/S areas, are held at Headquarters and in the field. Substantial support in the organization and conduct of training courses continues to be provided by Member States.

There is a continuing need for increased financial resources not only to enable the IAEA to meet its growing inspection workload but also to enable it to develop and to acquire better equipment. Zero real growth budget restraints affect the safeguards activities of the Agency. These effects are both beneficial and adverse in that the Agency is quite properly forced to ensure that further gains in the efficiency of its operations are achieved. However, these budgetary restrains have necessitated certain reductions in inspection-support activities and led to undue reliance on the provision of "cost-free" experts under the safeguards support programmes established by several Member States. Due to the non-growth budgets of the past years, some of the new equipment needed to increase the efficiency and effectiveness of safeguards operations in 1990 and 1991 may be financed through use of part of the Agency's cash surplus from 1988, depending on General Conference approval. A few Member States have already responded to the plea for voluntary contributions to relieve some urgent needs that cannot be met under a zero growth budget. One Member State has offered funds for the purchase of equipment for safeguards.

In the last five years the growth in safeguards operations has been slow because the growth in the nuclear industry has been slow. But there is growth, and it can not all be compensated for by efficiency gains. Moreover, the Agency is expected by many Member States to maintain a balance between the costs of its safeguards and non-safeguards activities.

(h) Designation of inspectors

The designation of the inspectors who will conduct inspections in Member States must first be agreed by the States concerned. Some States have found difficulties in responding to proposals for designation, and the Agency has experienced delays extending well beyond a reasonable period for such a response.

The restrictions and delays hamper the efficient use of inspection manpower. This problem is acute only in a relatively small number of cases but nevertheless its effect is quite significant. The SIR that the Director General submits each year to the IAEA Board of Governors devotes a special section to analysing designation problems and the progress that the Secretariat has been able to make in solving outstanding problems with States.

In February 1988, the Director General proposed that Member States waive their right of individual acceptance of inspectors and agree to a procedure whereby they accept all persons approved by the Board of Governors for use as inspectors. In November 1988 his proposal was elaborated, and it now also provides for a modified approach whereby the persons approved by the Board for use as inspectors are assumed to be acceptable to States which do not notify the Secretariat to the contrary within two months of dispatch of a Secretariat letter informing them of the Board's decision. So far, 22 States have informed the Agency in writing that they accept one or the other of these proposals.

(i) International Plutonium Storage (IPS)

In 1976 a study was begun by the Secretariat to examine ways of implementing Article XII.A.5 of the Agency's Statute including international storage of plutonium which provides "for the deposit with the Agency of any excess of any special fissionable materials recovered or produced as a by-product over what is needed for the above-stated uses in order to prevent stock-piling of these materials, provided that thereafter at the request of the member or members concerned special fissionable materials so deposited

with the Agency shall be returned promptly to the member or members concerned for use under the same provisions as stated above;". An expert group on IPS was first convened in 1978 to prepare proposals for the establishment of schemes for the international management and storage of plutonium. This expert group concluded its work in 1982 and submitted its report to the Director General. In June 1987 the Secretariat provided to the Board of Governors an up-dated plutonium data base paper containing estimates of present and future plutonium arisings. This paper was again updated in June 1990 and distributed to the Board of Governors.

The subject of implementing Article XII.A.5 of the Agency's Statute has been discussed on several occasions within the Board of Governors and support has been expressed for the continuation of discussions but no consensus has been reached.

After the 1985 NPT Review Conference a proposal was made to the Agency's Board of Governors to establish a committee or working group to examine the possibility of establishing a system of international plutonium storage based upon the 1982 report. No consensus was reached on this proposal.

Future of Safeguards

19. A number of elements determine the future of Agency safeguards. Although the Agency has the ability to fulfil its current safeguards responsibilities and has acquired a high level of expertise, an increase in human and financial resources, coupled with technical developments, will be essential to meet the Agency's increased safeguards workload and to improve inspection goal achievement. A summary of safeguards activities for the years 1980, 1985, 1986, 1987, 1988 and 1989 is given at Annex 5.

20. The growth of nuclear power seems unlikely to be as rapid in the next five-year period as it was in the period under review, but the complexity of safeguarded installations will require a greater inspection effort. Also, if any of the States having only INFIRC/66-type agreements in force should adhere to the NPT there will be an increase in the safeguards effort.

21. Paragraph 20 of the section on Article III of NPT in the Final Declaration of the 1985 NPT Review Conference called upon States Party to the Treaty to "continue their political, technical and financial support of the IAEA safeguards system". Paragraph 21 underlined the need "for the IAEA to be provided with other necessary financial and human resources to ensure that the Agency is able to continue to meet effectively its safeguards responsibilities". As shown in Annexes 2 and 3, the Agency's safeguards responsibilities have continued to grow since 1985. However, the Agency's safeguards budget, in real terms, has not kept pace.

22. During the period under review, a unified set of safeguards implementation and evaluation criteria were developed to achieve greater efficiency and to concentrate activities in areas which pose the greater proliferation risks. These efforts are to be further pursued, and it is expected that implementation of the new safeguards criteria will apply in the period 1991-95.

23. The safeguards approaches for large bulk-handling facilities and complex fuel cycles will continue to be of particular importance. In addition, efforts are still under way for the development of new safeguards equipment, techniques and procedures in areas where they are not yet available and where they would be required to meet the standards for effective use in the field.

24. The effectiveness of the safeguards system applied by the Agency will continue to be evaluated according to the provision of the various agreements concluded with Member States with the aim of ensuring that the credibility of Agency safeguards remains high.

25. These are not the only questions affecting the future of Agency safeguards. They will certainly have an impact on the Agency's budget, and Member States will need to review their attitude towards zero budget growth in general and the financing of safeguards in particular. Zero real growth in resources is not a policy that can be maintained indefinitely without serious consequences for the fulfillment of the Agency's tasks. It should also be recalled that all operational safeguards expenses are financed through the

Regular Budget. Additional expenses related to development work are financed through voluntary contributions made by a few States within the framework of their safeguards support programmes. The General Conference, in resolution GC(XXXIII)/RES/512 on the financing of safeguards adopted in September 1989, decided that the arrangements for the assessment of members' contributions shall continue to be applicable until 1992 with some amendments, and that those arrangements shall be reviewed by the Board in 1992 at the latest.

26. In October 1989 the Board of Governors established the informal Working Group on the Financing of Safeguards. In the first phase, a set of principles was agreed to serve as a basis for considering any future arrangements for the financing of safeguards. In the second phase, the elements specifying how these principles would be applied in defining cost-sharing arrangements will be developed. The third phase will deal with the details of the cost-sharing arrangements. The Group has held three meetings, its next meeting will be held in October 1990.

27. Paragraph 5 of the Section devoted to Article III of the Final Declaration of the 1985 NPT Review Conference recommended:

> "... the continued pursuit of the principle of universal application of IAEA safeguards to all peaceful nuclear activities in all States".

It also recommended:

> "... further evaluation of the economic and practical possibility of extending application of safeguards to additional civil facilities in the nuclear-weapon States as and when IAEA resources permit and consideration of separation of the civil and military facilities in the nuclear-weapon States".

If all civil nuclear activities in all nuclear-weapon States were brought under active IAEA safeguards, a very substantial increase in the IAEA's budget would be necessary. Rough estimates made in the months after the 1985 NPT Review Conference suggested that in such a case, the Agency's safeguards budget would have to be doubled or trebled.

Other options, such as a modest increase in safeguards coverage would cause less expense, but even such modest increases in expense have not been possible with zero or near zero growth budgets.

Public understanding

28. Both the public and government authorities must have sufficient information on the Agency's safeguards activities to enable them to judge whether, in their view, safeguards are effective and performed in a reliable and cost-effective way. Government authorities receive the required information through the Agency's Annual Report and the Safeguards Implementation Report, but the latter document has not, so far, been made public.

Arising from concern about the handling of nuclear waste, certain allegations were made in 1988 about supposed nuclear exports by a Member State. A number of senior Agency officials participated in public hearings, both national and international, to make the safeguards role of the Agency as transparent as possible.

During the period under review, the IAEA increased its activities aimed at informing the public about safeguards. These activities included the publication of brochures and articles in the IAEA Bulletin and speeches by the Director General and other senior Agency officials. In addition, a new film on safeguards was prepared. Information sessions for individual groups, and groups of young diplomats sent to the Agency for this purpose by the Department for Disarmament Affairs of the United Nations, were provided.

The Agency also organized a seminar in 1988 for journalists to improve their understanding of the safeguards and non-proliferation activities of the Agency.

ANNEX 1

Status : 1990-06-30

States which have not concluded the required safeguards agreement with the Agency in connection with NPT

NNWS party to NPT with no safeguards agreement in force a/ (1)	Date of ratif., accession or succession to NPT (2)	Status of negotiation (3)	Date agreement should enter into force (4)
Antigua and Barbuda b/	1 Nov 1981	Signed 1 Feb 90	1 May 1983
Bahamas	10 Jul 1973		10 Jan 1975
Bahrain	3 Nov 1988		3 May 1990
Barbados	21 Feb 1980		21 Aug 1981
Belize	9 Aug 1985	Approved Feb 86	9 Feb 1987
Benin	31 Oct 1972		30 Apr 1974
Bolivia b/	26 May 1970	Signed 23 Aug 1974	5 Mar 1972
Botswana	28 Apr 1969		5 Mar 1972
Burkina Faso	3 Mar 1970		5 Mar 1972
Burundi	19 Mar 1971		19 Sep 1972
Cameroon	9 Jan 1969		5 Mar 1972
Cape Verde	24 Oct 1979		24 Apr 1981
Central African Rep.	25 Oct 1970		25 Apr 1972
Chad	10 Mar 1971		10 Sep 1972
Colombia c/ d/	8 Apr 1986		8 Oct 1987
Congo	23 Oct 1978		23 Apr 1980
Dem. Kampuchea	2 Jun 1972		2 Dec 1973
Dem. P.'s Rep. Korea d/	12 Dec 1985		12 Jun 1987
Dominica	10 Aug 1984		10 Feb 1986
Equatorial Guinea	1 Nov 1984	Approved Jun 86	1 May 1986
Gabon	19 Feb 1974	Signed 3 Dec 1979	19 Aug 1975
Grenada	19 Aug 1974		19 Feb 1976
Guinea	29 Apr 1985		29 Oct 1986
Guinea-Bissau	20 Aug 1976		20 Feb 1978
Haiti b/	2 Jun 1970	Signed 6 Jan 1975	2 Jun 1972
Kenya	11 Jun 1970		11 Jun 1972
Kiribati	18 Apr 1985		18 Oct 1986
Kuwait	17 Nov 1989		17 May 1991
Lao P.'s Dem. Rep.	20 Feb 1970	Approved Feb 89	5 Mar 1972
Liberia	5 Mar 1970		5 Mar 1972
Malawi	18 Feb 1986		18 Aug 1987
Mali	10 Feb 1970		5 Mar 1972
Malta	6 Feb 1970		5 Mar 1972
Panama b/ c/	13 Jan 1977	Signed 22 Dec 1988	13 Jul 1978
Qatar	3 Apr 1989		3 Oct 1990

(1)	(2)	(3)	(4)
Rwanda	20 May 1975		20 Nov 1976
St.Vincent & Grenadines	6 Nov 1984		6 May 1986
San Marino	10 Aug 1970	Approved Feb 77	5 Mar 1972
Sao Tome & Principe	20 Jul 1983		20 Jan 1985
Saudi Arabia	3 Oct 1988		3 Apr 1990
Seychelles	12 Mar 1985		12 Sep 1986
Sierra Leone	26 Feb 1975	Signed 10 Nov 1977	26 Aug 1976
Solomon Islands	17 Jun 1981		17 Dec 1982
Somalia	5 Mar 1970		5 Mar 1972
Syrian Arab Republic	24 Sep 1969		5 Mar 1972
Togo	26 Feb 1970		5 Mar 1972
Tonga	7 Jul 1971	Approved Feb 75	7 Jan 1973
Trinidad and Tobago	30 Oct 1986		30 Apr 1988
Tuvalu	19 Jan 1979	Approved Feb 86	19 Jul 1980
Uganda	20 Oct 1982		20 Apr 1984
Yemen, Republic of	1 Jun 1979		1 Dec 1980

a/ The information reproduced in columns (1) and (2) was provided to the Agency by depositary Governments of NPT, and an entry in column (1) does not imply the expression of any opinion on the part of the Secretariat concerning the legal status of any country or territory or of its authorities, or concerning the delimitation of its frontiers. The Table does not contain information relating to the participation of Taiwan, China in NPT.

b/ The relevant safeguards agreement refers to both NPT and Treaty of Tlatelolco.

c/ Agreement pursuant to Treaty of Tlatelolco in force.

d/ Existing nuclear installations are covered by other safeguards agreements.

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ANNEX 2

Status: 1989-12-31

Safeguards application under agreements concluded pursuant to INFCIRC/153 (Corrected)

	1980	1985	1986	1987	1988	1989
States where safeguards are applied under agreements concluded pursuant to INFCIRC/153 (NPT and/or Tlatelolco)	35	42	42	42	42	43
Number of installations under safeguards in the above States	687	790	799	799	805	821
Significant quantities */ of nuclear material under safeguards in the above States	not available	22 575	26 655	28 978	32 738	36 741
Man-days of inspection performed in the above States	3876	6509	6651	7858	7396	8 260

*/ A significant quantity (SQ) is defined as the approximate quantity of nuclear material in respect of which, taking into account any conversion process involved, the possibility of manufacturing a nuclear explosive device cannot be excluded.

ANNEX 3

Status : 1989-12-31

Safeguards application under agreements concluded pursuant to INFCIRC/66/Rev.2

	1980	1985	1986	1987	1988	1989
States where safeguards are applied under agreements concluded pursuant to INFCIRC/66/Rev.2 (excluding nuclear-weapon States) */	12	10	10	10	10	10
Number of installations under safeguards in the above States	81	99	102	105	107	91
Significant quantities **/ of nuclear material under safeguards in the above States	not available	3 172	3 609	4 370	5 063	3 382
Man-days of inspection performed in the above States	446	1009	762	848	984	774

*/ Safeguards are also applied to nuclear installations in Taiwan, China.

**/ A significant quantity (SQ) is defined as the approximate quantity of nuclear material in respect of which, taking into account any conversion process involved, the possibility of manufacturing a nuclear explosive device cannot be excluded.

ANNEX 4

Safeguards resources 1985-89
(US Dollar) */

	Regular Budget (appropriations)	Extrabudgetary cash	Extrabudgetary in kind	Total
1985	32,547,000	3,023,053	159,372	35,729,425
1986	39,926,000	2,646,162	164,846	42,737,008
1987	48,034,000	1,467,147	253,150	49,754,297
1988	51,151,000	3,873,647	221,380	55,246,027
1989	51,260,000	3,808,778	163,124	55,231,902
Total	222,918,000	14,818,787	961,872	238,698,659

*/ not adjusted for inflation or currency fluctuations.

ANNEX 5

Status : 1989-12-31

Growth of safeguards activities during the period 1980 - 1989 (including safeguards activities in nuclear-weapon States)

	1980	1985	1986	1987	1988	1989
Number of inspectors (including inspection assistants)	116	180	192	195	196	211
Number of inspections carried out	1100	1981	2054	2133	2128	2196
Number of man-days of inspection	4004	7750	8292	9556	9379	10 132
Number of installations under safeguards	772	899	910	913	920	922
Number of installations inspected	393	509	595	627	666	630
Total Safeguards Budget in $000 (based on 1989 price levels)	38 477	51 125	51 125	51 125	51 381	52 922